

SHARLENE E. SANTANA

Graduate Program in Organismic and Evolutionary Biology
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Research Interests

Adaptive radiations, ecomorphology, biomechanics, evolution of feeding strategies.

Education

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| 2010
(Expected) | Ph.D. University of Massachusetts, Graduate Program in Organismic and Evolutionary Biology. |
| 2004 | Licenciada en Biología (5-year Bachelor's degree, includes a 2-year Thesis). Universidad de Los Andes, Mérida, Venezuela. Graduated <i>Summa Cum Laude</i> . |

Publications

- Santana, S. E.** and Dumont, E. R. 2009. Connecting behaviour and performance: The evolution of biting behaviour and bite performance in bats. *Journal of Evolutionary Biology* 22(11): 2131-2145.
- Dechmann, D., **Santana, S.E.** & Dumont, E.R. 2009. Roost making in bats - adaptations for excavating active termite nests. *Journal of Mammalogy* 90(6): 1461-1468.
- Dumont, E. R.; Herrel, A.; Medellín, R. A.; Vargas, J. and **Santana, S. E.** 2009. Built to bite: cranial design and function in the wrinkle faced bat (*Centurio senex*). *Journal of Zoology*. 279(4): 329-337.
- Santana, S. E.**, Dumont, E. R. and Davis, J. L. *In Press*. Mechanics of bite force production and its relationship to diet in bats. *Functional Ecology*.
- Davis, J. L., **Santana, S. E.**, Dumont, E. R. and Grosse, I. *In Press*. Predicting bite force in mammals: 2D vs. 3D lever models. *Journal of Experimental Biology*.
- Andersen, J.C.; Wu, J.; Gruwell, M.E.; Gwiazdowski, R.; **Santana, S.E.**; Feliciano, N.M.; Morse, G.E. and Normark, B.B. *In Press*. A phylogenetic analysis of armored scale insects (Hemiptera: Diaspididae), based upon nuclear, mitochondrial, and endosymbiont gene sequences. *Molecular Phylogenetics and Evolution*.

Manuscripts in review

Santana, S. E., and E. R. Dumont. Evidence of increased skull strength in a roost-excavating bat (*Lophostoma silvicolum*, Chiroptera: Phyllostominae). *Biological Journal of the Linnean Society*.

Dumont, E.R.; Davalos, L.M.; Goldberg, A.; Voigt, C.C.; Rex, K. and **Santana, S.E.** Diversification and the evolution of frugivory. *Science*.

Grants and Fellowships

- UCLA Center for Society and Genetics Postdoctoral Fellowship (2010-2011).
- Graduate School Fellowship. University of Massachusetts (2009-2010).
- Theodore Roosevelt Memorial Fund Grant. American Museum of Natural History (2009). \$2,000
- University of Massachusetts Natural History Collections Summer Fellowship (2008) \$ 4,000.
- University of Massachusetts Natural History Collections Summer Fellowship (2006) \$ 2,000.
- Smithsonian Tropical Research Institute Pre-doctoral Fellowship (2007). \$2,000.

Awards and Honors

- D. Dwight Davis Award, Honorable Mention. Division of Vertebrate Morphology, Society for Integrative and Comparative Biology (2010).
- Organismic and Evolutionary Biology Teaching Award. University of Massachusetts (2008)
- Order “Luis María Ribas Dávila” to the highest academic performance of the Biology Department, Universidad de Los Andes, Mérida, Venezuela (2001, 2003).
- FUNDACITE undergraduate scholarship to high academic performance (2000 –2002).
- Academic Award “Conmemoración de los 215 años de la creación de la Casa de Estudios de San Buenaventura”. Universidad de Los Andes, Mérida, Venezuela (2000).
- High Academic Performance Award. Universidad de Los Andes, Mérida, Venezuela (1997-2001).

Conference Presentations (all oral presentations)

Santana, S. E., Dumont, E. R. & Davis, J. L. 2010. Mechanisms of bite force production and their relationship with diet in Neotropical leaf-nosed bats. *Society for Integrative and Comparative Biology Annual Meeting*, Seattle, WA.

Santana, S. E. and Dumont, E.R. 2009. The evolution of biting behavior and bite performance in phyllostomid bats. 39th North American Symposium of Bat Research, Portland, OR.

Santana, S. E. and Dumont, E.R. 2009. Connecting performance and behavior: the evolution of bite performance and biting behavior in bats. *Society for Integrative and Comparative Biology Annual Meeting*, Boston, MA.

Santana, S.E., Dechmann, D.K.N. and Dumont, E.R. 2008. Evolution of roost making in bats: Adaptations for excavating active termite nests in *Lophostoma* (Phyllostomidae: Phyllostominae). 38th North American Symposium of Bat Research, Scranton, PA.

Santana, S.E., Dechmann, D.K.N. and Dumont, E.R. 2008. Roost-making behavior and bite force of bats living inside active termite nests. Society for Integrative and Comparative Biology Annual Meeting, San Antonio, TX.

Andersen, J., Feliciano, N. M., **Santana, S. E.**, Morse, G. E., Gwiazdowski, R. A. and Normark, B. B. 2006. Molecular phylogenetics and evolution of armored scale insects. American Society of Naturalists, Society for the Study of Evolution, and Society of Systematic Biologists Annual Meeting, Stony Brook University, NY.

Santana, S.E. and Dumont, E.R. 2006. Bite force and feeding behavior in Phyllostomine bats: basal patterns within the Phyllostomidae. 37th North American Symposium of Bat Research, Wilmington, NC.

Santana, S.E. and Molinari, J. 2006. Fruit feeding behavior of the silky short-tailed bat, *Carollia brevicauda*: an experimental study. American Society of Mammalogists 86th annual meeting, Amherst, MA.

Santana, S.E. and Molinari, J. Ecological and evolutionary implications of the feeding behavior of the silky short-tailed bat, *Carollia brevicauda*: an experimental study. 2005. 36th North American Symposium of Bat Research, Sacramento, CA.

Santana, S. E., Noguera, P. and Péfaur, J. 2003. Invertebrados asociados a bromelias epífitas en la selva nublada de Monte Zerpa, Mérida, Venezuela. V Congreso Venezolano de Ecología, Porlamar, Venezuela.

Research Experience

- 2005 - present The evolution of cranial morphology, feeding performance and behavior in Neotropical leaf-nosed bats (Chiroptera: Phyllostomidae). Ph.D. Dissertation. Advisor: Elizabeth R. Dumont. I am investigating the relationship among cranial and dental morphology, feeding performance and behavior in the dietary diversification of phyllostomid bats. To achieve this goal, I integrate data collected in the field and the lab through techniques such as 3D bite force models, phylogenetic comparative methods, dental complexity and finite element analysis.
- 2005 Quantification of wildlife illegal trade in Venezuela. Instituto Venezolano de Investigaciones Científicas. Supervisor: Dr. Jon Paul Rodríguez. I co-authored a report for the Venezuelan Department of the Environment about the illegal trade of wild species in Venezuela.

- 2004 – 2005 Species-centered Projects: catalysts of institutional development for conservation?” Instituto Venezolano de Investigaciones Científicas. Supervisors: Dr. Kathryn Rodríguez Clark and Dr. Jon Paul Rodríguez. Project funded by the Wildlife Trust. I conducted a meta-analysis of the trends in research topic, funding allocation and geographic concentration of conservation research worldwide in the last 100 years.
- 2004 Spectacled Bear Conservation in the Northern Andes. Mérida, Venezuela. Supervisor: Dr. Isaac Goldstein. Project funded by the Wildlife Conservation Society. I conducted a meta-analysis of bat records along an elevation gradient in the Andes.
- 2002 - 2004 Ecological and evolutionary implications of the feeding behavior of the silky short-tailed bat, *Carollia brevicauda*: an experimental study. Licenciatura Thesis. Advisor: Dr. Jesus Molinari. I studied the feeding behavior of *C. brevicauda* while it fed on its natural prey in the field and in semi-captivity.

Field Work

- 2006 - 2007 Collected behavioral, performance and ecological data from wild bats in Isla Colon, Panama, and several localities in the Andes and Llanos in Venezuela.
- 1999 – 2004 Collected ecological data from wild bats in Venezuela.
- 2000 Conducted a survey of the invertebrates associated to epiphytic bromeliads in the Monte Zerpa rainforest, Mérida, Venezuela.
- 2000 Conducted a survey of orthopterans living in different microhabitats in the glacial valley at Mucubají, Mérida, Venezuela.

Teaching Experience

Laboratory instructor:

- Fall 2006, Comparative Vertebrate Anatomy. University of Massachusetts.
Spring 2008
Spring 2006 Biology 101. University of Massachusetts.
Fall 2005 Biology 100. University of Massachusetts.

Teaching assistant:

- Fall 2008 Introductory Ecology. University of Massachusetts.
Fall 2006 Human Biology. University of Massachusetts.
2000 - 2004 Zoology laboratory. Universidad de Los Andes, Mérida, Venezuela.
1998 - 1999 General Biology laboratory. Universidad de Los Andes, Mérida, Venezuela.

Guest lectures

- Spring 2009 “Adaptive radiations”. Evolution. University of Massachusetts.
Spring 2009 “Order Chiroptera”. Mammalogy. University of Massachusetts.
Spring 2010 “Order Chiroptera”. Mammalogy. University of Massachusetts.

Professional Societies

Society for Integrative and Comparative Biology
American Society of Mammalogists
North American Society for Bat Research

Service

Reviewer for: *Journal of Mammalogy*, *Canadian Journal of Zoology*, *Acta Chiropterologica*

2008 - 2009 Organismic and Evolutionary Biology student president. University of Massachusetts.

2006 - present Organismic and Evolutionary Biology outreach program. University of Massachusetts. <http://www.bio.umass.edu/oeb/students/outreach>

2007 Bocas del Toro outreach program. Smithsonian Tropical Research Institute's Bocas del Toro Station, Panama.